AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (original): A method of controlling a flow of a fluid which is characterized in that at least a part of a surface of a fluid passage is comprised of a substance being capable of changing a contact angle of water by irradiation of light and the contact angle of water of the substance for changing a contact angle of water is controlled so as to change the contact angle of water of its surface, thereby controlling a flow of a fluid.

2. (original): A method of controlling a flow of a fluid in a microchannel which is characterized in that at least a part of a surface of the microchannel is a hydrophilization portion comprised of a substance being capable of decreasing a contact angle of water by irradiation of light and the hydrophilization portion is irradiated with light to decrease a contact angle of water of the surface thereof.

3. (original): A method of controlling a flow of a fluid in a microchannel in which at least a part of a surface of the microchannel is a hydrophilization portion comprised of a substance being capable of decreasing a contact angle of water by irradiation of light; said method comprises:

(1) irradiating the hydrophilization portion with light to decrease a contact angle of water of the surface thereof,

(2) releasing a substance for increasing a contact angle of water from a material for controlling a contact angle of water which contains the substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the hydrophilization portion subjected to decreasing of a contact angle of water, and

(3) bringing the released substance for increasing a contact angle of water into contact with the surface of the hydrophilization portion to adhere the substance for increasing a contact angle of water to the surface of the hydrophilization portion, thereby increasing the contact angle of water of the surface.

4. (original): The method of Claim 3, wherein said (3) is followed by (4) irradiation of light on the hydrophilization portion to which the substance for increasing a contact angle of water was adhered, to decrease the contact angle of water on the surface of the hydrophilization portion again.

5. (original): The method of Claim 4, wherein a passage of a fluid in the microchannel is switched alternately by repeating said (2) to (4).

6. (currently amended): The method of claim 2~~any of Claims 1 to 5~~, wherein the substance being capable of decreasing a contact angle of water by irradiation of light is a substance having a photocatalytic action.

7. (currently amended): The method of claim 2~~any of Claims 1 to 6~~, wherein the substance being capable of decreasing a contact angle of water by irradiation of light is titanium oxide.

8. (currently amended): The method of claim 3~~any of Claims 3 to 7~~, wherein means to release the substance for increasing a contact angle of water from the material for controlling a contact angle of water is irradiation of light or heating.

9. (currently amended): The method of claim 2~~any of Claims 2 to 8~~, wherein a light source is a laser generator, an ultraviolet lamp or a mercury lamp.

10. (currently amended): The method of claim 2~~any of Claims 2 to 9~~, wherein the method of light irradiation is an irradiation method being capable of changing a focus in the depth direction.

11. (currently amended): The method of claim 3~~any of Claims 3 to 10~~, wherein the material for controlling a contact angle of water which contains the substance for increasing a

contact angle of water comprises the substance for increasing a contact angle of water alone or is a liquid or solid containing the substance for increasing a contact angle of water.

12. (currently amended): The method of claim 3~~any of Claims 3 to 11~~, wherein the material for controlling a contact angle of water is polydimethylsiloxane containing the substance for increasing a contact angle of water.

13. (currently amended): The method of claim 3~~any of Claims 3 to 12~~, wherein the substance for increasing a contact angle of water is an organosilicon compound.

14. (currently amended): The method of claim 3~~any of Claims 3 to 13~~, wherein the portion other than the hydrophilization portion in the microchannel is made of the material for controlling a contact angle of water which contains the substance for increasing a contact angle of water.

15. (currently amended): The method of claim 2~~any of Claims 2 to 14~~, wherein a hydrophilic portion and a hydrophobic portion are selectively provided by selectively irradiating a specific region of the hydrophilization portion with light through a light-shielding pattern.

16. (currently amended): The method of claim 3~~any of Claims 3 to 15~~, wherein a hydrophilic portion and a hydrophobic portion are selectively provided by selectively applying

light or heat on a specific region of the material for controlling a contact angle of water through a shielding pattern.

17. (original): A valve provided in a passage of a fluid, wherein a part of an inner wall surface of the passage is comprised of a substance being capable of controlling a contact angle of water by irradiation of light and a fluid resistance in the passage of a fluid is controlled by controlling a contact angle of water of the inner wall surface comprised of the substance being capable of controlling a contact angle of water so as to differ from a contact angle of water of other inner wall surface.

18. (original): The valve of Claim 17, wherein the substance being capable of controlling a contact angle of water is a substance which is capable of exhibiting both of hydrophilic property and photocatalytic action.

19. (original): The valve of Claim 18, wherein the substance being capable of controlling a contact angle of water is titanium oxide.

20. (original): A valve for a microchannel which is provided in the microchannel and has a hydrophobic portion and a hydrophilization portion, wherein the hydrophobic portion is made of a material for controlling a contact angle of water which can release a substance for increasing a

contact angle of water by application of light or heat and the hydrophilization portion is made of a substance being capable of decreasing a contact angle of water by irradiation of light.

21. - 22. (canceled)

23. (currently amended): A micro device having the valve of claim 17~~any of Claims 17 to 22~~.

24. (currently amended): A microsensor having the valve of claim 17~~any of Claims 17 to 22~~.

25. (new): The method of Claim 1, wherein the substance being capable of changing a contact angle of water by irradiation of light is a substance having a photocatalytic action.

26. (new): The method of Claim 1, wherein the substance being capable of changing a contact angle of water by irradiation of light is titanium oxide.

27. (new): The method of Claim 3, wherein the substance being capable of decreasing a contact angle of water by irradiation of light is a substance having a photocatalytic action.

28. (new): The method of Claim 3, wherein the substance being capable of decreasing a contact angle of water by irradiation of light is titanium oxide.

29. (new): The method of Claim 3, wherein a light source is a laser generator, an ultraviolet lamp or a mercury lamp.

30. (new): The method of Claim 3, wherein the method of light irradiation is an irradiation method being capable of changing a focus in the depth direction.

31. (new): The method of Claim 3, wherein a hydrophilic portion and a hydrophobic portion are selectively provided by selectively irradiating a specific region of the hydrophilization portion with light through a light-shielding pattern.

32. (new): The valve of Claim 20, wherein the substance being capable of decreasing a contact angle of water by irradiation of light is a substance which is capable of exhibiting both of hydrophilic property and photocatalytic action.

33. (new): The valve of Claim 32, wherein the substance being capable of decreasing a contact angle of water by irradiation of light is titanium oxide.

34. (new): A micro device having the valve of Claim 20.

35. (new): A microsensor having the valve of Claim 20.